DETAILED ACTION

Response to Amendment

1. The Examiner acknowledges the amended claims filed on February 29, 2008. **Claims 1 and 5-11** have been amended. **Claims 2-4 and 12** have been canceled.

Response to Arguments

2. Applicant's arguments with respect to **claims 1, 5 and 9-11** have been considered but are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 5-7 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al., US 2002/0135687 A1 and Shiobara, JP 2000-115788 A in view of Kuwata et al., JP 2001-177733 A and further in view of Watanabe et al., US Patent 6,823,083 B1.

Regarding claim 1, Nakajima et al. discloses an image processing device (Fig. 1: 20) for processing image data using image data generated by an image generating device (Fig. 1: 12), and image generation record information that is associated with the

image data and that includes at least information (Fig. Fig. 3: 102) relating to shooting conditions at the time of generation of the image data (Page 4, ¶ 0064 – page 5, ¶ 0069), the image processing device comprising: an image quality adjuster that (Page 6, ¶ 0088 – page 8, ¶ 00109), if the image generation record information contains light source information relating to color shift of a light source at the time of generation (color cast; see page 2, ¶ 0017; see also fig. 11) of the image data, is able to execute color adjustment process of the image data based on color of the light source obtained using the light source information (Page 4, ¶ 0064 – page 5, ¶ 0069; page 6, ¶ 0088 – page 8, ¶ 00109), the image quality adjuster adjusts magnitude of the white balance adjustment process based on hue of the light source (color cast; see page 2, ¶ 0017; see also fig. 11). Nakajima et al. further discloses that the white balance adjustment process includes: (ii) a process of determining an amount of the white balance adjustment process based on the amount of color cast (See page 2, ¶ 0017; see also fig. 11), wherein the magnitude of white balance adjustment process is adjusted by means of adjusting, based on the hue of the light source, a pre-selected processing parameter used in said process (ii) (Nakajima et al. also teaches that the image processing is performed based on a selected mode indicating the conditions of the scene (see fig. 11), page 2, ¶ 0017; page 4, ¶ 0064 – page 5, ¶ 0069; page 6, ¶ 0088 – page 8, ¶ 00109; see also fig. 11).

Nakajima et al. does not explicitly disclose that the color adjustment process performed to the image based on the color of the light source is specifically white balance; the white balance adjustment process including: (i) a process of analyzing pixel values of a par of pixels making up the image data to determine an amount of

color cast indicating deviation of hue of the image data from gray (Shiobara, Machine English Translation, page 2, ¶ 0002-0008; page 3, ¶ 0009-0010; page 5, ¶ 0029-0032; page 6, ¶ 0033); (iii) a process of executing the white balance adjustment process in accordance with the determined amount; that the saturation threshold value being large in a case where hue of the pixel is within a partial range of hue compared to a case where the hue of the pixel is outside the partial range of hue.

However, Shiobara discloses the concept of storing the image condition related to the image captured for further processing of said image, wherein said conditions include color temperature and color of the light source used to capture the image so that the image data can be processed by said camera and further processed by a printer wherein white balance adjustment would be performed to the image based on the color of the light source (See Machine English Translation, page 2, ¶ 0002-0008; page 3, ¶ 0009-0010; page 5, ¶ 0029-0032; page 6, ¶ 0033). Shiobara further discloses that the white balance adjustment process includes: (i) a process of analyzing the image data to determine an amount of color cast indicating deviation of hue of the image data from gray (Shiobara, Machine English Translation, page 2, ¶ 0002-0008; page 3, ¶ 0009-0010; page 5, ¶ 0029-0032; page 6, ¶ 0033); (ii) a process of determining an amount of the white balance adjustment process based on the amount of color cast (see Machine English Translation, page 2, ¶ 0002-0008; page 3, ¶ 0009-0010; page 5, ¶ 0029-0032; page 6, ¶ 0033); (iii) a process of executing the white balance adjustment process in accordance with the determined amount (Shiobara, Machine English Translation, page 2, ¶ 0002-0008; page 3, ¶ 0009-0010; page 5, ¶ 0029-0032; page 6, ¶ 0033), wherein the magnitude of white balance adjustment process is adjusted by means of adjusting,

based on the hue of the light source, a pre-selected processing parameter used in said process (i) (Shiobara, Machine English Translation, page 2, ¶ 0002-0008; page 3, ¶ 0009-0010; page 5, ¶ 0029-0032; page 6, ¶ 0033).

Therefore, taking the combined teaching of Nakajima et al. in view of Shiobara as a whole at the time the invention was made, after acknowledging the benefits of performing color balance based on the color of the light source with the concept as taught in Shiobara, one of an ordinary skill in the art would find obvious to modify the teaching of Nakajima et al. to perform white balance correction based on the color of the light source; to have the white balance adjustment process including: (i) a process of analyzing the image data to determine an amount of color cast indicating deviation of hue of the image data from gray; (iii) a process of executing the white balance adjustment process in accordance with the determined amount, wherein the magnitude of white balance adjustment process is adjusted by means of adjusting, based on the hue of the light source, a pre-selected processing parameter used in said process (i). The motivation to do so would have been to properly correct the white balance regardless of the type of illumination present at the time of the photograph as suggested by Shiobara (See Machine English Translation, page 2, ¶ 0004-0006).

The combined teaching of Nakajima et al. in view of Shiobara fails to teach analyzing the pixel values of a par of pixels making up the image data to determine said amount of color cast indicating deviation of hue of the image data from gray; that the saturation threshold value being large in a case where hue of the pixel is within a partial range of hue compared to a case where the hue of the pixel is outside the partial range of hue.

However, Kuwata et al. discloses a color correction method wherein the saturation of each color pixel is calculated, then said saturation is compared to a threshold and if the saturation for the pixel is found to be smaller than said threshold, which represents gray, it is judged whether the pixel is near gray and sets said pixel as object for data analysis, said determination is performed to all pixels, then the luminance for said pixels is calculated. After that an average luminance for said pixels used as object for data analysis is calculated and compared to an average Red, Green and Blue color to determine how far from gray is the image data used for analysis in order to calculate the amount of white balance correction required to adjust the image data (by teaching selecting a group of pixels with a saturation level near the threshold for gray color, Kuwata et al. teaches selecting a par of pixel values making up the image data to determine said amount of color cast indicating deviation of hue of the image data from gray) (See English Machine Translation, page 5, ¶ 0021 – page 7, ¶ 0032).

Therefore, taking the combined teaching of Nakajima et al. in view of Shiobara and further in view of Kuwata et al. as a whole at the time the invention was made, one of an ordinary skill in the art would find obvious to modify the teaching of Nakajima et al. and Shiobara to use a par of pixels making up the image data to determine said amount of color cast indicating deviation of hue of the image data from gray. The motivation to do so would have been to make the white balance correction reducing the effect of image part, such as a background, dress, etc. of a high saturation color as suggested by Kuwata et al. (See English Machine Translation, page 7, ¶ 0033).

The combined teaching of Nakajima et al. in view of Shiobara and further in view of Kuwata et al. further teaches that the image quality adjuster establishes, as a

condition for selecting pixels for the analysis from among all pixels making up the image data, a condition whereby pixels having a higher saturation value are selected for the analysis as a pixel hue comes closer to the hue of the light source, in order to adjust the magnitude of white balance adjustment process (Kuwata et al. discloses selecting the pixels with a saturation smaller that a particular saturation threshold related to gray and near the gray color. This teaches selecting pixels for the analysis from among all pixels making up the image data, a condition whereby pixels having a higher saturation value than a particular threshold are selected for the analysis as a pixel hue comes closer to the hue of the light source, in order to adjust the magnitude of white balance adjustment process (English Machine Translation, page 5, ¶ 0021 – page 7, ¶ 0032) since the pixels used for correction calculation are the pixels that does not present characteristics of bright colors of the object being photographed).

The combined teaching of Nakajima et al. in view of Shiobara and further in view of Kuwata et al. fails to teach that the saturation threshold value being large in a case where hue of the pixel is within a partial range of hue compared to a case where the hue of the pixel is outside the partial range of hue.

However, Watanabe et al. discloses a color correction apparatus and method in which the data for each pixel is analyzed based on a saturation threshold in order to adjust the luminance of said pixel, wherein the saturation threshold is dependent on the hue of the image data so that when the hue of said pixel is within a partial range of hue (i.e. between 100º and 150º as shown in fig. 22 (having a maximum at 130º)) said saturation threshold is large (i.e. a maximum of 60 at 130º inside range of 30-60 for the saturation threshold in the partial range of 100º-150º) compared to a case where the

hue of the pixel is outside the partial range of hue (i.e. having a threshold at 30 in the outside of the partial range) (Col. 18, line 22 – col. 19, line 14). Watanabe et al. further discloses that adjusting the saturation threshold based on the hue of the image would allow to correct the luminance of the pixel based on deviation from gray, wherein when a pixel is of a gray color no adjustment is necessary (Col. 19, lines 3-9).

Therefore, taking the combined teaching of Nakajima et al. and Shiobara in view of Kuwata et al. and further in view of Watanabe et al. as a whole, it would have been obvious to one of an ordinary skill in the art at the time the invention was made to modify the teaching in Nakajima et al., Shiobara and Kuwata et al. by having the saturation threshold value being large in a case where hue of the pixel is within a partial range of hue compared to a case where the hue of the pixel is outside the partial range of hue. The motivation to do so would have been to improve the white balance method by correcting the luminance of the pixel based on a difference from gray color, wherein when a pixel is of a gray color no adjustment is necessary, thus properly correcting the image signal affected by the imaging light source as suggested by Watanabe et al. (Col. 2, line 47 – col. 3, line 13; col. 3, line 64 – col. 4, line 45; col. 19, lines 3-14).

Regarding claim 5, limitations have been discussed and analyzed in claim 1.

Regarding claim 6, the combined teaching of Nakajima et al. and Shiobara in view of Kuwata et al. and further in view of Watanabe et al. as discussed and analyzed in claim 1 teaches that the image quality adjuster selects for the analysis pixels approximating achromatic color in the image data by teaching selecting the pixels closer to gray (See Kuwata et al., English Machine Translation, page 5, ¶ 0021 – page 7, ¶ 0032).

Regarding claim 7, the combined teaching of Nakajima et al. and Shiobara in view of Kuwata et al. and further in view of Watanabe et al. as discussed and analyzed in claim 1 teaches the image quality adjuster selects for the analysis pixels excluding pixels of predetermined hue by teaching selecting the pixels closer to gray since the pixels that are not selected would have a different hue related to clothing, background, etc. (See Kuwata et al., English Machine Translation, page 5, ¶ 0021 – page 7, ¶ 0032).

Regarding claim 9, limitations have been discussed and analyzed in claim 1.

Regarding claim 10, claim 10 is a method claim of the apparatus in claim 1. Limitations have been discussed and analyzed in claim 1.

Regarding claim 11, claim 11 required a computer program stored on a computer readable medium for causing a computer to execute the image processing discussed in claims 1 and 10. Limitations have been discussed and analyzed in claim 1. Furthermore, Nakajima et al. discloses a computer program stored on a computer readable medium for causing a computer to execute the image processing (Page 2, ¶ 0024 – page 3, ¶ 0030; page 8, ¶ 0107; page 9, ¶ 0012).

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al., US 2002/0135687 A1, Shiobara, JP 2000-115788 A and Kuwata et al., JP 2001-177733 A in view of Watanabe et al., US Patent 6,823,083 B1 and further in view of Sato, JP 2001-339739 A.

Regarding claim 8, the combined teaching of Nakajima et al. and Shiobara in view of Kuwata et al. and further in view of Watanabe et al. as discussed and analyzed in claim 1 teaches that the image quality adjuster is able to determine whether the color

balance of the image data was adjusted according to user instruction at the time of generation of the image data (Nakajima et al. discloses that the user is able to select white balance adjustment (weak color cast) as shown in fig. 11) but fails to teach that if determined to have been adjusted according to user instruction, the image quality adjuster executes the white balance adjustment process using a lower magnitude than if the determination had not been made.

However, Sato teaches a white balance adjustment method wherein the amount of white balance correction is determined based on whether the color balance of the image data was adjusted according to user instruction at the time of generation of the image data and if determined to have been adjusted according to user instruction, the image quality adjuster executes the white balance adjustment process using a lower magnitude than if the determination had not been made (as shown in the English Machine translation (page 1, page 2, ¶ 0005-0007; page 3, ¶ 0008-0009; page 5, ¶ 0022-0027; page 6, ¶ 0029 – page 8, ¶ 0043), Sato discloses that the user select different characteristics to be used as selected by the user, so if the user selects certain lighting conditions, the coefficients calculated for white balance would be reduced).

Therefore, taking the combined teaching of Nakajima et al., Shiobara and Kuwata et al. in view of Watanabe et al. and further in view of Sato as a whole, it would have been obvious to one of an ordinary skill in the art at the time the invention was made to modify Nakajima et al., Shiobara, Kuwata et al. and Watanabe et al. by processing white balance using a lower magnitude than if no determination of white balance of the image data was adjusted according to user instruction at the time of generation of the image data according to user instruction. The motivation to do so

would have been to properly adjust the white balance of the image data without creating problems when performing the process to a person without the required skill to perform the necessary correction as suggested by Sato (Page 2, ¶ 0002-0003).

Conclusion

6. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernández whose telephone number is (571)272-7311. The examiner can normally be reached on 9:00 A.M. to 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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